NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE MATERIAL SPECIFICATION

IRRIGATION WATER CONVEYANCE
(High Pressure Underground Plastic Pipeline)
(ft.)

CODE 430-DD

Materials Specifications:

Quality of plastic pipe. The compound used in manufacturing the pipe shall meet the requirements of one of the following materials:

1. Polyvinyl chloride (PVC) as specified in ASTM-D-1784.

Material	Code classification
Type I, Grade 1	12454-8
Type I Grade 2	12454-C
Type II, Grade 1	14333-D

2. Acrylonitrile-butadiene-styrene (ABS) as specified in ASTM-D-1788.

Material	Code classification
Type I, Grade 2	5-2-2
Type I Grade 3	3-5-5
Type II, Grade 1	4-4-5

3. Polyethylene (PE) as specified in ASTM-D-1248.

Material	Code classification
Grade P14, Class C	IC-P14
Grade P23, Class C	IIC-P23
Grade P33, Class C	IIIC-P33
Grade P34, Class C	IVC-P34

The pipe shall be homogeneous throughout and free from visible cracks, holes, foreign matter, or other defects. The pipe shall be as uniform in color, opacity, density, and other physical properties as is commercially practicable.

Pipe requirements. All pipe installed under this standard shall be pressure rated for water. The relationship between standard dimension ratios dimensions, hydrostatic design stresses, and pressure ratings shall be determined by one of the following formulas:

For PVC. ABS, and PE pipe with outside diameter controlled:

$$\frac{2S}{P} = \frac{D_o}{t} - 1, \text{ or } \frac{2S}{P} = R - 1$$

For PE pipe with inside diameter controlled:

$$\frac{2S}{P} = \frac{D_j}{t} + 1, \text{ or } \frac{2S}{P} = R + 1$$

Where:
S = hydrostatic design stress, in lb/in^2,
P = pressure rating in lb/in^2,
D_o -average outside diameter in inches,
D_j = average inside diameter in inchees,
t = minimum wall thickness in inches,
R = standard thermoplastic pipe dimension ratio (SDR),

Hydrostatic design stresses for the plastic pipe material are given in table 1.

Iron pipe size (IPS) (outside diameter same as that for iron pipe sizes) and I.D. controlled PE pipe manufactured, tested, and marked to meet one of the following ASTM specifications shall be acceptable under this specification. Water pressure ratings and pertinent dimensions for this pipe are given in tables 3, 4, 5, 6, and 7.

ASTM	Standard specification for -
D-1785	Polyvinyl chloride (PVC) Plastic Pipe, Schedules 40, 80, and 120
D-2241	Polyvinyl chloride (PVC) Plastic Pipe, (SDR-PR)
D-2672	Bell-End Polyvinyl chloride (PVC) Plastic Pipe
D-2740	Polyvinyl chloride (PVC) Plastic Tubing
D-1527	Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe, Schedules 40 and 80
D-2282	Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe (SDR-PR)
D-2104	Polyethylene (PE) Plastic Pipe, Schedule 40
D-2239	Polyethylene (PE) Plastic Pipe, (SDR-PR)
D-2447	Polyethylene (PE) Plastic Pipe, Schedules 40 and 80, based on outside diameter
D-2737	Polyethylene (PE) Plastic Tubing
D-3035	Polyethylene (PE) Plastic Pipe, (SDR-PR), based on controlled outside diameter
F-771	Polyethylene (PE) Thermoplastic High Pressure Irrigation Pipeline Systems

Plastic irrigation pipe (PIP) shall meet the requirements of ASTM-D-2241 or of ASTM-D-2282 except that:

1. The outside diameters, wall thicknesses, and tolerances given in table 2 shall apply.
2. The sustained pressure test shall not be required.
3. The burst pressure tests shall be performed according to the procedures listed in ASTM-D-2241 or D-2282 and shall meet the applicable requirements given in these ASTM's or those listed below for the standard dimension ratios (SDR's) currently not included in ASTM-D-2241 or D-2282.

Burst pressure requirements for water at 23° C (73.4° F) for PVC 1120 and PVC 1220 plastic pipe are:

SDR	Minimum burst pressure[1] lb/in^2
51	260

[1] The design stress levels used to drive these test pressures are: PVC 1120 - 6,400 lb/in^2; PVC 1220 – 6,400 lb/in^2.

Burst pressure requirements for water at 23° C (73.4° F) for ABS plastic pipe are:

	Minimum burst pressure[1]	
SDR	ABS 2112	ABS 1316
32.5	420	380
41	-	300

[1]The fiber stresses used to drive these test pressures are: ABS 2112 – 6,600 lb/in^2; ABS 1316 – 6,000 lb/in^2. To simplify testing, minor adjustments have been made to keep the test pressures uniform.

Markings. Markings on the pipe shall include the following, which shall be spaced at intervals of not more than 5 ft:

1. Nominal pipe size (for example, 2 in).
2. Type of plastic pipe material, by designation code (for example, PVC 1120).
3. Pressure rating, in lb/in^2, for water at 23°C (73.4° F) (for example, 160 lb/in^2).
4. Specification designation with which the pipe complies:
    a. For IPS-size pipe, the ASTM designation (for example, D-2241). Pipe meeting one of the ASTM designations listed for IPS-size pipe and intended for the transport of potable water shall also be marked with the seal of a recognized laboratory making the evaluation for this purpose.
    b. For plastic irrigation pipe, the designation PIP.
5. Manufacturer's name (or trademark) and code.

Fittings and couplers. All fittings and couplers shall meet or exceed the same strength requirements as those of the pipe and shall be made of material that is recommended for use with the pipe.

Listed below are the ASTM standard specifications for fittings suitable for use with IPS-size pipe and inside diameter controlled PE pipe covered by this standard:

ASTM-	Standard Specification for-
D-2466	Socket-type Polyvinyl chloride (PVC) Plastic Pipe, Schedule 40
D-2467	Socket-type Polyvinyl chloride (PVC) Plastic Pipe, Schedule 80
D-2468	Socket-type Acrylonitrile-Butadiene-Styrene (ABS) Plastic Fittings, Schedule 40
D-2609	Plastic Insert Fittings for Polyethylene (PE) Plastic Pipe
D-2683	Socket-type Polyethylene Fittings for SDR 11.0 Polyethylene Pipe
D-3139	Standard specification for Plastic Pressure Pipe using Flexible Elastomeric Seals
D-3261	Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastc Pipe and Tubing

Plastic irrigation pipe (PIP) shall have belled ends or separate couplers and fittings that are suitable for joining the pipe and appurtenances by solvent cement, rubber gaskets, or other methods recommended by the pipe manufacturer. Such fittings and joints shall be capable of withstanding a working pressure equal to or greater than that for the pipe.

Solvent cement joints. Solvent for solvent cement joints shall conform to ASTM Specification D-2564 for PVC pipe and fittings and to D-2235 for ABS pipe and fittings. Solvent cement joints shall be used and constructed according to the recommendations of the pipe manufacturer.

Rubber gasket joints. Rubber gasket joints shall conform to ASTM Specification D-3139.

Table 1. - Hydrostatic design stress and designation-plastic pipe

Plastic pipe material	Hydrostatic design stress lb/in^2	Designation
PVC Type I, Grade 1	2,000	PVC 1120
PVC Type I, Grade 2	2,000	PVC 1220
PVC Type II, Grade 1	1,000	PVC 2110
PVC Type II, Grade 1	1,250	PVC 2112
PVC Type II, Grade 1	1,600	PVC 2116
ABS Type I, Grade 2	800	ABS 1208
ABS Type I, Grade 2	1,000	ABS 1210
ABS Type I, Grade 3	1,600	ABS 1316
ABS Type II, Grade 1	1,250	ABS 2112
PE Grade P14	400	PE 1404
PE Grade P23	500	PE 2305
PE Grade P23	630	PE 2306
PE Grade P33	630	PE 3306
PE Grade P34	630	PE 3406
PE Grade P34	600	PE 3408

Table 2.—PVC and ABS plastic irrigation pipe (PIP)
(Nonthreaded)

Nominal pipe size (in)	SDR	PVC pressure rating (lb/in²) Material 1120 1220	2116	2112	2110	Dimension and tolerance: Wall thickness Min (in)	Wall thickness Tolerance (in)	Outside diameter Average (in)	Outside diameter ± Tolerance Avg. O.D. (in)	Outside diameter ± Tolerance Max and Min (in)	ABS pressure rating (lb/in²) Material 1316	2112	1210
4	51	80				0.081	+0.020	4.130	0.009	0.050			
	41	100	80			.101	+.020				80		
	32.5	125	100	80		.127	+.020				100	80	
	26	160	125	100	80	.159	+.020				125	100	80
6	51	80				.120	+.020	6.140	.011	.050			
	41	100	80			.150	+.020				80		
	32.5	125	100	80		.189	+.023				100	80	
	26	160	125	100	80	.236	+.028				125	100	80
8	51	80				.160	+.020	8.160	.015	.070			
	41	100	80			.199	+.024				80		
	32.5	125	100	80		.251	+.031				100	80	
	26	160	125	100	80	.314	+.038				125	100	80
10	51	80				.200	+.024	10.200	.015	.075			
	41	100	80			.249	+.030				80		
	32.5	125	100	80		.314	+.038				100	80	
	26	160	125	100	80	.392	+.047				125	100	80
12	51	80				.240	+.029	12.240	.015	.075			
	41	100	80			.299	+.036				80		
	32.5	125	100	80		.377	+.045				100	80	
	26	160	125	100	80	.471	+.056				125	100	80
14	51	80				.280	+.034	14.280	.021	.075			
	41	100	80			.348	+.042				80		
	32.5	125	100	80		.439	+.053				100	80	
	26	160	125	100	80	.549	+.066				125	100	80
15	51	80				.300	+.036	15.300	.023	.075			
	41	100	80			.373	+.045				80		
	32.5	125	100	80		.471	+.057				100	80	
	26	160	125	100	80	.588	+.071				125	100	80
16	51	80				.314	+.038	16.314	.024	.075			
	41	100	80			.390	+.047				80		
	32.5	125	100	80		.492	+.059				100	80	
	26	160	125	100	80	.615	+.074				125	100	80
18	51	80				.367	+.044	18.367	.027	.100			
	41	100	80			.456	+.127				80		
	32.5	125	100	80		.575	+.069				100	80	
21	51	80				.432	+.05	21.432	.033	.100			
	41	100	80			.538	+.15				80		
	32.5	125	100	80		.678	+.081				100	80	
24	51	80				.486	+.058	24.486	.036	.125			
	41	100	80			.605	+.169				80		
	32.5	125	100	80		.763	+.092				100	80	
27	51	80				.548	+.066	27.548	.047	.125			
	41	100	80			.682	+.19				80		
	32.5	125	100	80		.860	+.103				100	80	

Table 3.—PVC and ABS thermoplastic pipe (SDR–PR)—(IPS)
(Nonthreaded)

	(PVC–ASTM–D–2241)									(ABS–ASTM–D–2282)			
Nominal pipe size (in)	SDR	PVC pressure rating (lb/in²) Material 1120 1220	2116	2112	2110	Dimension and tolerance Wall thickness Min (in)	Tolerance (in)	Outside diameter Average (in)	± Tolerance Avg. O.D. (in)	Max and Min (in)	ABS pressure rating (lb/in²) Material 1316	2112	1210	1208
½	17					0.060	+0.020	0.804	0.004	0.008	200	160	125	100
	13.5	315	250	200	160	.062	+.020			.008	250	200	160	125
¾	21	200	160	125	100	.060	+.020	1.050	.004	.015	160	125	100	80
	17	250	200	160	125	.062	+.020			.010	200	160	125	100
	13.5	315	250	200	160	.078	+.020			.010	250	200	160	125
1	26	160	125	100	80	.060	+.020	1.315	.005	.015	125	100	80	
	21	200	160	125	100	.063	+.020			.015	160	125	100	80
	17	250	200	160	125	.077	+.020			.010	200	160	125	100
	13.5	315	250	200	160	.097	+.020			.010	250	200	160	125
1¼	32.5	125	100	80		.060	+.020	1.660	.055	.015	100	80		
	26	160	125	100	80	.064	+.020			.015	125	100	80	
	21	200	160	125	100	.079	+.020			.015	160	125	100	80
	17	250	200	160	125	.098	+.020			.012	200	160	125	100
	13.5	315	250	200	160	.123	+.020			.012	250	200	160	125
1½	32.5	125	100	80		.060	+.020	1.900	.006	.030	100	80		
	26	160	125	100	80	.073	+.020			.030	125	100	80	
	21	200	160	125	100	.090	+.020			.030	160	125	100	80
	17	250	200	160	125	.112	+.020			.012	200	160	125	100
	13.5	315	250	200	160	.141	+.020			.012	250	200	160	125
2	32.5	125	100	80		.060	+.020	2.375	.006	.030	100	80		
	26	160	125	100	80	.091	+.020			.030	125	100	80	
	21	200	160	125	100	.113	+.020			.030	160	125	100	80
	17	250	200	160	125	.140	+.020			.012	200	160	125	100
	13.5	315	250	200	160	.176	+.021			.012	250	200	160	125
2½	32.5	125	100	80		.083	+.020	2.875	.007	.030	100	80		
	26	160	125	100	80	.110	+.020			.030	125	100	80	
	21	200	160	125	100	.137	+.020			.030	160	125	100	80
	17	250	200	160	125	.169	+.020			.015	200	160	125	100
	13.5	315	250	200	160	.213	+.026			.015	250	200	160	125
3	32.5	125	100	80		.108	+.020	3.500	.008	.030				
	26	160	125	100	80	.135	+.020			.030	125	100	80	
	21	200	160	125	100	.167	+.020			.030	160	125	100	80
	17	250	200	160	125	.206	+.025			.015	200	160	125	100
	13.5	315	250	200	160	.259	+.031			.015	250	200	160	125
3½	41	100	80			.098	+.020	4.000	.008	.050				
	32.5	125	100	80		.123	+.020			.050				
	26	160	125	100	80	.154	+.020			.050	125	100	80	
	21	200	160	125	100	.190	+.023			.050	160	125	100	80
	17	250	200	160	125	.235	+.028			.015	200	160	125	100
	13.5	315	250	200	160	.296	+.036			.015	250	200	160	125
4	41	100	80			.110	+.020	4.500	.009	.050				
	32.5	125	100	80		.138	+.020			.050				
	26	160	125	100	80	.173	+.021			.050	125	100	80	
	21	200	160	125	100	.214	+.026			.050	160	125	100	80
	17	250	200	160	125	.265	+.032			.015	200	160	125	100
	13.5	315	250	200	160	.333	+.040			.015	250	200	160	125

Table 3.—PVC and ABS thermoplastic pipe (SDR–PR)—(IPS)—Continued

(Nonthreaded)

Nominal pipe size (in)	SDR	PVC pressure rating (lb/in²) (PVC–ASTM–D–2241) Material 1120 1220	2116	2112	2110	Dimension and tolerance: Wall thickness Min (in)	Tolerance (in)	Outside diameter Average (in)	± Tolerance Avg. O.D. (in)	Max and Min (in)	ABS pressure rating (lb/in²) (ABS–ASTM–D–2282) Material 1316	2112	1210	1208
5	41	100	80			.136	+.020	5.563	.010	.050				
	32.5	125	100	80		.171	+.021			.050				
	26	160	125	100	80	.214	+.027			.050	125	100	80	
	21	200	160	125	100	.265	+.032			.050	160	125	100	80
	17	250	200	160	125	.327	+.039			.030	200	160	125	100
	13.5	315	250	200	160	.412	+.049			.030	250	200	160	125
6	41	100	80			.162	+.020	6.625	.011	.050				
	32.5	125	100	80		.204	+.024			.050				
	26	160	125	100	80	.255	+.031			.050	125	100	80	
	21	200	160	125	100	.316	+.038			.050	160	125	100	80
	17	250	200	160	125	.390	+.047			.035	200	160	125	100
	13.5	315	250	200	160	.491	+.059			.035	250	200	160	125
8	41	100	80			.210	+.025	8.625	.015	.075				
	32.5	125	100	80		.265	+.032			.075				
	26	160	125	100	80	.332	+.040			.075	125	100	80	
	21	200	160	125	100	.410	+.049			.075	160	125	100	80
	17	250	200	160	125	.508	+.061			.045				
10	41	100	80			.262	+.031	10.750	.015	.075				
	32.5	125	100	80		.331	+.040			.075				
	26	160	125	100	80	.413	+.050			.075	125	100	80	
	21	200	160	125	100	.511	+.061			.075	160	125	100	80
	17	250	200	160	125	.632	+.076			.050				
12	41	100	80			.311	+.037	12.750	.015	.075				
	32.5	125	100	80		.392	+.047			.075				
	26	160	125	100	80	.490	+.059			.075	125	100	80	63
	21	200	160	125	100	.606	+.073			.075	160	125	100	80
	17	250	200	160	125	.750	+.090			.060				
16	41	100	80			.389	+.047	16.00	.019	.160				
	32.5	125	100	80		.492	+.059			.160				
	26	160	125	100	80	.615	+.074			.160	125	100	80	
18	41	100	80			.439	+.061	18.36	.019	.180				
	32.5	125	100	80		.554	+.066			.180				
	26	160	125	100	80	.692	+.083			.180	125	100	80	
20	41	100	80			.488	+.068	20.40	.023	.200				
	32.5	125	100	80		.615	+.074			.200				
	26	160	125	100	80	.769	+.092			.200	125	100	80	
24	41	100	80			.585	+.082	24.00	.031	.240				
	32.5	125	100	80		.738	+.088			.240				
	26	160	125	100	80	.923	+.111			.240	125	100	80	

Table 4.—Polyethylene plastic pipe (SDR–PR)—I.D. controlled
(Nonthreaded)
(PE–ASTM–D–2239)

Nominal pipe size (in)	SDR	Pressure rating (lb/in²) Material[1] 3306 3406 2306	2305	1404	Wall thickness Minimum (in)	Tolerance + (in)	Inside diameter (in)	Tolerance + (in)	Tolerance – (in)
½	15	80			0.060	0.020	0.622	0.010	0.010
	11.5	100	80		.060	.020			
	9	125	100	80	.069	.020			
	7	160	125	100	.089	.020			
	5.3	200	160	125	.117	.020			
¾	15	80			.060	.020	.824	.010	.015
	11.5	100	80		.072	.020			
	9	125	100	80	.092	.020			
	7	160	125	100	.118	.020			
	5.3	200	160	125	.155	.020			
1	15	80			.070	.020	1.049	.010	.020
	11.5	100	80		.091	.020			
	9	125	100	80	.117	.020			
	7	160	125	100	.150	.020			
	5.3	200	160	125	.198	.024			
1¼	15	80			.092	.020	1.380	.010	.020
	11.5	100	80		.120	.020			
	9	125	100	80	.153	.020			
	7	160	125	100	.197	.024			
	5.3	200	160	125	.260	.031			
1½	15	80			.107	.020	1.610	.015	.020
	11.5	100	80		.140	.020			
	9	125	100	80	.179	.020			
	7	160	125	100	.230	.028			
	5.3	200	160	125	.304	.036			
2	15	80			.138	.020	2.067	.015	.020
	11.5	100	80		.180	.022			
	9	125	100	80	.230	.028			
	7	160	125	100	.295	.035			
	5.3	200	160	125	.390	.047			
2½	15	80			.165	.020	2.469	.015	.025
	11.5	100	80		.215	.025			
3	15	80			.205	.020	3.068	.015	.030
	11.5	100	80		.267	.032			
4	15	80			.268	.032	4.026	.015	.035
	11.5	100	80		.350	.042			
6	15	80			.404	.048	6.065	.020	.035
	11.5	100	80		.527	.063			

[1]For the material PE 3408, the SDR's are 5.3, 7.0, 9.0, and 15.0 and their respective pressure ratings (lb/in²) are 250, 200, 160, and 100.

Table 5.—Polyethylene plastic pipe (SDR–PR)—O.D. controlled (IPS)
(Nonthreaded)
(PE–ASTM–D–3035)

Nominal pipe size (In)	SDR	Pressure rating (lb/in²) Material[1] 3306 3406 2306	2305	1404	Wall thickness Minimum (in)	Tolerance + (in)	Outside diameter (in)	Tolerance + (in)	Tolerance − (in)
½	17	80			0.062	0.020	0.840	0.004	0.004
	13.5	100	80		.062	.020			
	11	125	100	80	.076	.020			
¾	17	80			.062	.020	1.050	.004	.004
	13.5	100	80		.078	.020			
	11	125	100	80	.095	.021			
1	17	80			.077	.020	1.315	.005	.005
	13.5	100	80		.097	.020			
	11	125	100	80	.119	.026			
1¼	17	80			.098	.020	1.660	.005	.005
	13.5	100	80		.123	.020			
	11	125	100	80	.151	.026			
1½	17	80			.112	.020	1.900	.006	.006
	13.5	100	80		.141	.020			
	11	125	100	80	.173	.026			
2	17	80			.140	.020	2.375	.006	.006
	13.5	100	80		.176	.021			
	11	125	100	80	.216	.026			
3	17	80			.206	.025	3.500	.008	.008
	13.5	100	80		.259	.031			
	11	125	100	80	.318	.038			
4	17	80			.264	.032	4.500	.009	.009
	13.5	100	80		.333	.040			
	11	125	100	80	.409	.049			
6	17	80			.390	.047	6.625	.011	.011
	13.5	100	80		.491	.059			
	11	125	100	80	.602	.072			

[1]For the material PE 3408, the SDR's are 11, 13.5, 17, and 21 and their respective pressure ratings (lb/in²) are 160, 125, 100, and 80.

Table 6a.—Water pressure ratings for schedules 40 and 80 unthreaded plastic pipe: polyvinyl chloride

Nominal size (in)	Average inside diameter (in)		(PVC–ASTM–D–1785 Schedule 40 and 80 Pipe) Working pressure rating (lb/in²)							
			PVC 1120 1220		PVC 2116		PVC 2112		PVC 2110	
	Sch. 40	Sch. 80	Sch. 40	Sch. 80	Sch. 40	Sch. 80	Sch. 40	Sch. 80	Sch. 40	Sch. 80
½	0.622	0.546	600	850	480	680	370	530	300	420
¾	.824	.742	480	690	390	550	300	430	240	340
1	1.049	.957	450	630	360	500	280	390	220	320
1¼	1.380	1.278	370	520	290	420	230	320	180	260
1½	1.610	1.500	330	470	260	380	210	290	170	240
2	2.067	1.939	280	400	220	320	170	250	140	200
2½	2.469	2.323	300	420	240	340	190	260	150	210
3	3.068	2.900	260	370	210	300	160	230	130	190
3½	3.548	3.364	240	350	190	280	150	220	120	170
4	4.026	3.826	220	320	180	260	140	200	110	160
5	5.047	4.813	190	290	160	230	120	180	100	140
6	6.065	5.761	180	280	140	220	110	170	90	140
8	7.981	7.625	160	250	120	200	100	150	80	120
10	10.020	9.564	140	230	110	190	90	150		120
12	11.938	11.376	130	230	110	180	80	140		110

Table 6b.—Water pressure ratings for schedules 40 and 80 unthreaded plastic pipe: acrylonitrile-butadiene-styrene

Nominal size (in)	Average inside diameter (in)		(ABS–ASTM–D–1527 Schedule 40 and 80 Pipe) Working pressure rating (lb/in²)							
			ABS 1316		ABS 2112		ABS 1210		ABS 1208	
	Sch. 40	Sch. 80	Sch. 40	Sch. 80	Sch. 40	Sch. 80	Sch. 40	Sch. 80	Sch. 40	Sch. 80
½	0.622	0.546	430	680	370	530	300	420	240	340
¾	.824	.742	390	550	300	430	240	340	190	280
1	1.049	.957	360	500	280	390	220	320	180	250
1¼	1.380	1.278	290	420	230	330	180	260	150	210
1½	1.610	1.500	260	380	210	290	170	240	130	190
2	2.067	1.939	220	320	170	250	140	200	110	160
2½	2.469	2.323	240	340	190	270	150	210	120	170
3	3.068	2.900	210	300	160	230	130	190	100	150
3½	3.548	3.364	190	280	150	220	120	170	90	140
4	4.026	3.826	180	260	140	200	110	160	90	130
5	5.047	4.813	160	230	120	180	100	140	80	120
6	6.065	5.761	140	220	110	170	90	140		110
8	7.981	7.625	120	200	100	150	80	120		100
10	10.020	9.564	110	190	90	150		120		90
12	11.938	11.376	110	180	80	140		110		90

Table 6c.—Water pressure ratings for schedules 40 and 80 unthreaded plastic pipe: polyethylene

Nominal size (in)	Average inside diameter (in)		(PE–ASTM–D–2104 Schedule 40 Pipe) Working pressure rating (lb/in²)			(PE–ASTM–D–2447 Schedule 40 and 80 Pipe) Working pressure rating (lb/in²)					
			PE 2306 3306 3406	PE 2305	PE 1404	PE 2306 3306 3406		PE 2305		PE 1404	
	Sch. 40	Sch. 80	Sch. 40	Sch. 40	Sch. 40	Sch. 40	Sch. 80	Sch. 40	Sch. 80	Sch. 40	Sch. 80
½	0.622	0.546	190	150	120	188	267	149	212	119	170
¾	.824	.742	150	120	100	152	217	120	172	96	137
1	1.049	.957	140	110	90	142	199	113	158	90	126
1¼	1.380	1.278	120	90		116	164	92	130		104
1½	1.610	1.500	100	80		104	148	83	118		94
2	2.067	1.939	90			87	127		101		81
2½	2.469	2.323	100	80		96	134		106		85
3	3.068	2.900	80			83	118		94		
3½	3.548	3.364					109		86		
4	4.026	3.826					102		81		
5	5.047	4.813					91				
6	6.065	5.761					88				

NOTE: Ratings for ASTM–D–2104 Schedule pipe are based on inside diameter control; ratings for ASTM–D–2447 Schedule pipe are based on outside diameter control.

Table 7.—Polyethylene and polyvinyl chloride plastic tubing

Nominal size (in)	Outside diameter (in)	Inside diameter (in) (PE–ASTM–D–2737) PE 2306 3306 3406 3408	(PE–ASTM–D–2737) PE 2305	(PVC–ASTM–D–2740) PVC 1120 1220	(PVC–ASTM–D–2740) PVC 2116	(PVC–ASTM–D–2740) PVC 2112	(PVC–ASTM–D–2740) PVC 2110	Pressure rating (lb/in²)
½	0.625	0.487	0.453	0.501	0.501	0.501	0.501	160
⅝	.750	.584	.544					160
¾	.875	.681	.635	.751	.751	.751	.745	160
1	1.125	.875	.817	1.001	1.001	.993	.959	160
1¼	1.375	1.069	.999	1.251	1.245	1.213	1.171	160
1½	1.625	1.263	1.159					160
2	2.125	1.653	1.543					160

Table 8.—Pressure rating factors for PVC and PE pipe for water at elevated temperatures

Temperature deg F	PVC factor	PE factor
73.4	1.00	1.00
80	.88	.92
90	.75	.81
100	.62	.70
110	.50	—
120	.40	—
130	.30	—
140	.22	—

NOTE: To obtain the pipe's reduced pressure rating because of water temperatures above 73.4 deg F, multiply normal pressure rating by the appropriate factor from table.